DATA ITEM DESCRIPTION

Title: Geophysical Prove-Out (GPO) Plan and Report

Number: MR-005-05A **Approval Date:** 20031201
AMSC Number: **Limitation:**
DTIC Applicable: No **GIDEP Applicable:** No
Office of Primary Responsibility: CEHNC-ED-CS-G
Applicable Forms:
Use/Relationship: The Geophysical Prove-out (GPO) Plan will be used to provide details of the approach, methods, and operational procedures to be (1) employed to perform GPOs for Munitions Response or other munitions related projects and (2) documented as part of the Geophysical Investigation Plan. This Data Item Description contains instructions for preparing GPO Plans and Reports. Additional references include EM 1110-1-4009.

Requirements:

1. GPO Plan. The elements described in the following sub-sections shall be addressed in the GPO Plan.

1.1 Test Plot/Test Strip Design. The proposed test plot/test strip layout shall be included in the GPO Plan.

a. Prove-out Size and Location. Selection of the prove-out area should be based upon the technical and site-specific considerations developed and finalized during the Technical Project Planning process and/or project team meetings, and follow anticipated layout for project data collection. It may be necessary to prepare more than one prove-out grid, mini-grid, or test strip if site conditions vary significantly. It may be advantageous to plan the prove-out location outside of areas where digging is restricted to UXO technicians and/or oversight by UXO technicians.

b. Seed Items. A tabulated list, available in digital format, containing the seed items, ID numbers, proposed X, Y, Z locations, proposed inclination and declination (or survey information on the nose, tail, and center point of the item) shall be included. Inert ordnance items should be used whenever possible.

1.2 Site Preparation. Describe any preparation that may be necessary to allow accessibility with geophysical instruments including vegetation removal and/or surface removal. After this step, the test plot should duplicate, as closely as possible, the conditions under which the geophysical surveys will be conducted.

1.3 Location Surveying. Describe the location methods to be employed. The location of the test plot corners and seed items shall be surveyed by a professional land surveyor (PLS) to a horizontal accuracy of 3 cm and a vertical accuracy of 5 cm. The center and both ends of seed items shall be surveyed. In addition, surface elevation shall be measured after seed item burial, to accurately determine depth below ground surface.

1.4 Pre-Seeding (Background) Geophysical Mapping. Describe background geophysical mapping. After a site has been selected and the surface prepared, pre-seeding geophysical surveys shall be performed with each detector type in order to determine and document base-line geophysical conditions at the site.

1.5 Quality Control. Describe Quality Control (QC) measures to be implemented. At a minimum, the tests outlined in Attachment B of DID MR-005-05 shall be performed.

1.6 Anomaly Avoidance. A statement that the contractor shall use anomaly avoidance techniques shall be included. This is to ensure the location of each excavation and corner marker/stake is clear of metallic anomalies before placing seed items or site corner markers, and includes utilizing the background geophysical data.

1.7 Seeding. Describe the planned seeding methodology for known items. In addition to the known seed items, blind seed items may be buried by the Government, and/or the contractor's UXO QC Specialist, for quality control. The contractor shall allot ample time for burial of blind seed items and ensure that adequate excavating equipment is

available to attain the seed item burial depths planned. Once placed, all seeded items and corner markers should be surveyed and photographed. The planned GPO target layout plan shall be updated to reflect the "as built" configuration. The seeded items should be painted blue and tagged with a non-biodegradable label identifying the items as inert and providing a contract reference, a point of contact address, phone number, and a target identifier.

1.8 Data Collection Variables. It is important to collect and analyze test plot data using the same equipment and procedures that are planned for field use. It is strongly recommended that key personnel from the GPO perform the production survey to minimize the learning curve and provide project continuity. Some data collection elements are subject to modification and evaluation and multiple geophysical surveys using each proposed geophysical instrument may be performed. These elements include: instrument height, instrument orientation and direction of travel, instrument channel selections, measurement interval along survey line, lane width, etc.

1.9 Data Analysis and Interpretation. All data collected at the prove-out grid from each geophysical instrument will be post-processed and analyzed. It is required that all data channels are analyzed to ensure the best methodology is established for each site. A dig-sheet, provided as Attachment C of DID MR-005-05, of selected target anomalies shall be prepared and provided to the project team for comparison with seeded item locations.

1.10 Reacquisition. The contractor shall perform anomaly reacquisition and verification, and record these measurements on the dig-sheet. This should be done to the same extent and with the same equipment as planned for the production geophysical investigation. If the GPO location is situated in an area where digging of unknown targets is permitted (e.g., beyond project site boundaries), it may be advantageous, based upon the professional judgment of the project geophysicist, in concurrence with CEHNC, to excavate a limited number of unknown anomalies that are identified during the pre-seeding background surveys. It is anticipated that such information would be used to aid in characterizing false positive responses in the project area.

1.11 Data Evaluation.

a. The geophysical data must be evaluated and scored so that the different geophysical approaches can be compared and ranked. Scoring criteria should include, as a minimum, the following: percent of seeded items detected (by class or size, and overall); number of unknown targets; production rate; cost per unit area; equipment durability and safety.

b. No single geophysical system is likely to achieve maximum scores in all evaluated areas. Therefore, the evaluation team must determine which approach is likely to be most efficient for the site.

2. GPO Letter Report.

3.1 After the GPO field work has been completed, the contractor shall prepare a GPO Letter Report including the following:

a. As-built drawing of the GPO plot;

b. Pictures of the seed items;

c. Color maps of the geophysical data;

d. Summary of the GPO results;

e. Proposed geophysical equipment, techniques, and methodologies; and

f. Sufficient supporting information to justify the project team's recommendations, including manufacturer specifications for all recommended geophysical equipment, a definition of the expected target anomalies based upon the Archives Search Report, Site Inspection Report, Remedial Investigation/Feasibility Study or Engineering Evaluation/Cost Analysis results, or any other pertinent data/information used in decision making.

2.2 A CD shall be delivered with the letter report containing the following files:

a. The GPO Letter Report (Microsoft Word format);

b. All raw and processed geophysical data. All data, except raw instrument data, shall be provided in column delineated ASCII files in the format x, y, z, v1, v2, etc., where x and y are UTM Grid Plane Coordinates in Easting (meters) and Northing (meters) directions, z (elevation) is an optional field in meters, and v1, v2, v3, etc., are the instrument readings. The last data field should be a time stamp. Each data field shall be separated by a comma or tab.

c. Geophysical maps in their native format (Surfur®, Geosoft Oasis montaj™, Intergraph, or ESRI ArcView format) and/or as raster bit-map images such as BMP, JPEG, TIFF or GIF;

d. Seed item location spreadsheet (Microsoft Excel format);

e. Spreadsheet (Microsoft Excel format) of contractor picks for each sensor type, including reacquisition; and

f. Spreadsheet (Microsoft Excel format) of all control points, survey points and benchmarks established or used during the Location Surveying task.

2.3 The contractor may not proceed with production geophysical mapping until the Government approves the GPO results as provided in the GPO Letter Report.

2.4 The GPO Letter Report and Contracting Officer Approval Letter shall be included in future geophysical reports and work plans associated with the survey area.

3. End of DID MR-005-05A.